**Abstract**

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**Title of the diploma thesis**: Comparison of methods for determination of amphetamine derivates in meconium

The aim of the bachelor thesis was to optimize a new method for the determination of amphetamine derivatives in meconium, which will be faster and simpler than the existing routine method in the toxicological laboratory of Masaryk´s Hospital in Ústí nad Labem.

The theoretical part of the bachelor thesis describes the main representatives of amphetamine derivatives, their effects and metabolism. Their determination in meconium is important for the diagnosis of Neonatal abstinence syndrome, which occurs in newborns of mothers using addictive substances during pregnancy. Meconium, the first stool of a newborn, is a suitable material demonstrating exposure to drugs and medication during the second and third trimesters of pregnancy.

Amphetamine derivatives were determined in meconium by gas chromatography with mass detection, the principles and instrumentalization of which are another part of the bachelor's thesis. The experimental part describes the optimization of a new, more advantageous method using pentafluorobenzoyl chloride as a derivatizing agent and its comparison with the routine method using heptafluorobutyric anhydride as a derivatizing agent.

In the new method, the used amount of derivatizing agent and the type of organic solvent was optimized. Also, the precursor and product ions were monitored and the appropriate collision energy was selected. Selected validation parameters - limit of detection, limit of quantification, repeatability and intrinsic accuracy were measured and then compared with the routine method. Subsequently, the concentrations of amphetamine derivatives in meconium samples supplied from the clinical departments of the Regional Health Hospital were measured.